

The Extragalactic eta Carinae Analogs

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Powerful eruptions of massive stars, such as η Carinae are often referred to as “supernova impostors,” because some observational aspects can mimic the appearance of a true supernova (SN). During the Great Eruption during the 1800’s of eta Car, the star greatly exceeded the Eddington limit, with its bolometric luminosity increasing by ~ 2 mag. The total luminous output of such an eruption ($\sim 10^{49.7}$ erg) can rival that of a SN, to such a degree that some impostors initially are assigned designations as SNe, even in modern extragalactic SN searches. Not all impostors are as powerful as η Car; some cases are more like the “classical” LBVs (e.g., S Dor), where the bolometric luminosity remains constant during an eruption, as the star’s envelope expands or its wind becomes optically thick, and the apparent temperature cools to ~ 8000 K. Like η Car, the precursor star for each impostor is expected to survive the eruption and return to relative quiescence. A number of extragalactic SN impostors, or η Car analogs, are known, such as SNe 1954J, 1961V, 1997bs, 1999bw, 2000ch, 2001ac, 2002kg, 2003gm, NGC 2363-V1, etc. I will present here the latest results for several of these analogs. Some have had eruption survivors identified, some have seemingly “vanished” after outburst, and one continues in outburst after almost a decade. Studying the characteristics of the analogs provides us with a greater understanding of η Car itself and of the evolution of very massive stars.